



DRILLED SHAFT NOTES:

- PRIOR TO INSTALLING THE DRILLED SHAFTS, COFFERDAM EXCAVATION OF THE COBBLE AND BOULDER LAYER AND INSTALLATION OF A COFFERDAM WILL BE REQUIRED TO THE LIMITS SHOWN. THE EXCAVATION OUTSIDE OF THE COFFERDAM LIMITS WILL BE PAID FOR UNDER UNCLASSIFIED CHANNEL EXCAVATION. A TEMPORARY STEEL SLEEVE SHALL BE PLACED FROM THE TOP OF THE LACUSTRINE LAYER TO THE BOTTOM OF THE PILE CAP. BACKFILL OUTSIDE OF SLEEVE WITH STONE FILL, TYPE IV.
- THE TEMPORARY STEEL SLEEVE SHOULD BE REMOVED PRIOR TO FORMING THE PILE CAP. THE CONTRACTOR MAY ELECT TO LEAVE THE TEMPORARY STEEL SLEEVE IN PLACE. IF THE SLEEVE IS LEFT IN PLACE, IT SHALL NOT INTERFERE WITH THE FORMING AND PLACEMENT OF THE PILE CAP, AND ANY VOIDS BETWEEN THE DRILLED SHAFT AND TEMPORARY STEEL SLEEVE SHALL BE FILLED WITH NON-SHRINK MORTAR (TYPE IV) MEETING THE REQUIREMENTS OF SUBSECTION 707.03 OF THE SPECIFICATION. THE COST FOR GROUT SHALL BE INCIDENTAL TO ITEM 900.640, SPECIAL PROVISION (DRILLED SHAFT IN EARTH) (2.44 m).
- THE TYPE IV STONE FILL SHALL BE PLACED TO THE BOTTOM OF THE PILE CAP AFTER CURING OF THE DRILLED SHAFT IS COMPLETE. AFTER THE PILE CAP IS FORMED AND CURED, THE CONTRACTOR SHALL PLACE THE TYPE IV STONE FILL SO AS NOT TO DAMAGE THE PIER AND PILE CAP. THE STONE SHALL BE PLACED AROUND THE PIER AND NOT DROPPED.

NOTES:

- GRUBBING MATERIAL SHALL NOT BE PLACED ON THE STONE FILL UNDER THE SUPERSTRUCTURES.
- SEE THE REINFORCED SOIL SLOPE DETAILS, BRIDGE SHEET BR202 FOR MORE INFORMATION.
- KEY THE TYPE IV STONE FILL A MINIMUM OF 1.2 m INTO EXISTING FLUVIAL (COBBLE AND BOULDER) LAYER. THE THICKNESS OF THE KEY SHALL BE ADJUSTED IF THE RESIDENT ENGINEER DETERMINES THE EXISTING COBBLE AND BOULDER LAYER WILL PROVIDE THE SAME SLOPE PROTECTION AS THE TYPE IV STONE.
- THE NEED FOR THE 300 UNDERCUT SHALL BE DETERMINED BY THE RESIDENT ENGINEER.
- COFFERDAM SIZE TO BE DETERMINED BY THE CONTRACTOR.
- CUT OFF THE COFFERDAM STEEL SHEET PILING 1.2 m BELOW THE GROUND SURFACE ELEVATION WITH THE PORTION BELOW GROUND TO BE LEFT IN PLACE. AFTER THE PIER HAS BEEN CONSTRUCTED, THE COST OF THE SHEET PILING THAT IS TO REMAIN IN PLACE SHALL BE INCIDENTAL TO THE COFFERDAM ITEM. STEEL SHEET PILING THAT IS LEFT IN PLACE SHALL MEET THE REQUIREMENTS OF SUBSECTION 107.22 OF THE SPECIFICATION.
- THE PAY LIMITS OF "COFFERDAM EXCAVATION, EARTH" AND "COFFERDAM EXCAVATION, ROCK" SHALL BE 600 OUTSIDE THE PERIMETER OF THE PILE CAP.
- TRANSITION THE SUBBASE OVER 15 m FROM THE BACK OF ABUTMENT. REFER TO THE HIGHWAY PLANS FOR DETAILS.
- ALL DIMENSIONS ON BRIDGE SHEETS BR201 TO BR331 ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

LOADING LEVELS (LOAD FACTOR)	LOAD FACTOR LOAD RATING (LFD) (RAMP A) (METRIC TONS)						
	M18	MS18	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY	33	58					
A = 2.17; B = 1.00							
POSTED	46	81	178		156	158	176
A = 1.55; B = 1.40							
OPERATING		97	212	228	186	189	
A = 1.30; B = 1.67							

LOADING LEVELS (LOAD FACTOR)	LOAD FACTOR LOAD RATING (LFD) (RAMP D) (METRIC TONS)						
	M18	MS18	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY	29	52					
A = 2.17; B = 1.00							
POSTED	41	72	160		138	141	156
A = 1.55; B = 1.40							
OPERATING		87	191	204	165	168	
A = 1.30; B = 1.67							

STRENGTH RF = $\frac{M_n}{M_{LL+1}} - 1.3 \frac{M_{DL}}{M_{LL+1}}$ * SERVICEABILITY RF = $B \left[1.95 F_y S_{LL+1} - \frac{M_{DL}}{1.67 M_{LL+1}} - \frac{M_{SL+1}}{M_{DL}} \right]$

HYDROLOGIC DATA

DRAINAGE AREA = 10 725 ha
 CHARACTER OF TERRAIN: MOUNTAINOUS
 CHARACTER & TYPE OF STREAM: STRAIGHT, PERENNIAL AND FLASHY
 NATURE OF STREAMBED: COBBLE LAYER INTERLACED WITH SAND AND GRAVEL

DATE OF FLOOD OF RECORD: UNKNOWN
 WATER SURFACE ELEV.: UNKNOWN ESTIMATED DISCHARGE: UNKNOWN
 NATURAL STREAM VELOCITY @ Q50 = 3.9 m/sec @ Q100 = 4.1 m/sec
 ICE CONDITIONS: MODERATE DEBRIS: SLIGHT
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY? YES
 IS ORDINARY RISE RAPID? YES
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? NO
 IF YES, DESCRIBE.

WATERSHED STORAGE: 0.9% HEADWATERS UNIFORM THROUGHOUT WATERSHED X IMMEDIATELY ABOVE SITE

EXISTING STRUCTURE

STRUCTURE TYPE: N/A
 CLEAR SPAN (NORMAL TO STREAM): N/A
 VERTICAL CLEARANCE ABOVE STREAMBED: N/A
 WATERWAY OF FULL OPENING: N/A
 DISPOSITION OF STRUCTURE: N/A
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: N/A

WATER SURFACE ELEV. @ Q2.33 = 253.04 VELOCITY = 2.7 mps
 Q10 = 253.20 " " " 3.4 mps
 Q25 = 253.38 " " " 3.7 mps
 Q50 = 253.56 " " " 3.9 mps
 Q100 = 253.72 " " " 4.1 mps

LONG TERM STREAM BED CHANGES: N/A
 IS THE ROADWAY OVERTOPPED BELOW THE Q100? N/A FREQUENCY: N/A
 RELIEF ELEVATION: N/A DISCHARGE OVER ROAD @ Q100: N/A

UPSTREAM STRUCTURE: TOWN: BENNINGTON DISTANCE: 1.1 km
 HIGHWAY NO.: VT 30 STRUCTURE NO.: 9
 STRUCTURE TYPE: 3 SPAN CONTINUOUS COMPOSITE ROLLED BEAM
 CLEAR SPAN: 63.7 m CLEAR HEIGHT: 5.2 m
 YEAR BUILT: 1990 FULL WATERWAY: 252 sq. m

DOWNSTREAM STRUCTURE: TOWN: BENNINGTON DISTANCE: 0.7 km
 HIGHWAY NO.: TH 30 STRUCTURE NO.: 33
 STRUCTURE TYPE: 2 SPAN SIMPLE ROLLED BEAM
 CLEAR SPAN: 43.6 m CLEAR HEIGHT: 5.7 m
 YEAR BUILT: 1959 FULL WATERWAY: 98 sq. m

- DESIGN CRITERIA:**
- DESIGN METHOD SUPERSTRUCTURE - LOAD FACTOR DESIGN; SUBSTRUCTURE - SERVICE LOAD DESIGN
 - DESIGN LIVE LOAD AASHTO MS 22.5
 - DESIGN SPAN VT ROUTE 279: 45.026 - 53.971 - 45.110 m, RAMP A: 45.000 - 54.000 - 45.000 m, RAMP D: 45.150 - 54.262 - 45.501 m
 - ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL 290 kPa (ABUT. 1), 380 kPa (ABUT. 2) ON LEDGE N/A
 - ALLOWABLE LOAD FOR DRILLED SHAFTS 14,850 kN (VT ROUTE 279) TYPE REINFORCED CONCRETE ESTIMATED LENGTH 25.300 m (VT ROUTE 279)
 - ALLOWABLE LOAD FOR DRILLED SHAFTS 14,850 kN (RAMPS A AND D) TYPE REINFORCED CONCRETE ESTIMATED LENGTH 22.250 m (RAMPS A AND D)
 - STRUCTURAL STEEL AASHTO GRADE M270/M270 GR345W (F_y = 345 MPa) HYBRID WITH AASHTO M270/M270 GR485W (F_y = 485 MPa) WEATHERING STEEL
 - REINFORCING STEEL GRADE 420
 - CONCRETE, HIGH PERFORMANCE CLASS A f_c : 30 MPa
 CONCRETE, HIGH PERFORMANCE CLASS A LOW CEMENT f_c : 30 MPa
 CONCRETE, HIGH PERFORMANCE CLASS B f_c : 25 MPa
 CONCRETE, HIGH PERFORMANCE MASS POUR f_c : 25 MPa

- TRAFFIC MAINTENANCE:**
- IS TRAFFIC TO BE MAINTAINED? NO IF YES, ON EXISTING STRUCTURE N/A OR ON TEMPORARY BRIDGE N/A
 - TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY N/A TRAFFIC CONTROL SIGNALS REQUIRED N/A
- MINIMUM CLEAR SPAN (NORMAL TO STREAM): N/A VERTICAL CLEARANCE ABOVE STREAMBED: N/A
 WATERWAY AT FULL OPENING: N/A
 ARE SIDEWALKS REQUIRED? N/A IF SO, ON WHAT SIDE? N/A

PROPOSED STRUCTURE

STRUCTURE TYPE: 3 - THREE SPAN CURVED CONTINUOUS PLATE GIRDER BRIDGES
 CLEAR SPAN (NORMAL TO STREAM): 145 m
 VERTICAL CLEARANCE ABOVE STREAMBED: 12.7 m
 WATERWAY OF FULL OPENING: 1247 sq. m

WATER SURFACE ELEV. @ Q2.33 = 253.05 VELOCITY = 2.7 mps
 Q10 = 253.23 " " " 3.4 mps
 Q25 = 253.38 " " " 3.7 mps
 Q50 = 253.56 " " " 3.9 mps
 Q100 = 253.72 " " " 4.1 mps

IS THE ROADWAY OVERTOPPED BELOW THE Q100? NO FREQUENCY: N/A
 RELIEF ELEVATION: N/A DISCHARGE OVER ROAD @ Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 264.0
 VERTICAL CLEARANCE @ Q100 = 10.3 m

SCOUR: CHANNEL = 0.20 m PIER = 5.74 m
 REQUIRED CHANNEL PROTECTION: STONE FILL, TYPE IV @ PIERS

PERMIT INFORMATION

AVERAGE DAILY FLOW: 2.38 cms
 ORDINARY LOW WATER: 0.71 cms ELEV.: 251.6
 ORDINARY HIGH WATER: 53.3 cms ELEV.: 253.0

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: N/A
 CLEAR SPAN (NORMAL TO STREAM): N/A
 VERTICAL CLEARANCE ABOVE STREAM BED: N/A
 WATERWAY OF FULL OPENING: N/A

- HYDROLOGIC COMPUTATIONS WERE OBTAINED FROM FEMA'S FLOOD INSURANCE STUDY FOR THE TOWN OF BENNINGTON, VT (COMMUNITY NUMBER 50013), EFFECTIVE DATE JUNE 17, 1986. AS SUCH, THE 2.33 AND 25 YEAR FLOW WAS NOT ESTABLISHED. THEREFORE, THE 2.33 AND 25 YEAR FLOW FOR THIS PROJECT WAS ESTIMATED BASED ON THE USGS REGRESSION EQUATION. THE FEMA INFORMATION WAS CALCULATED DOWNSTREAM AT THE CONFLUENCE OF THE WALLOOMSAC RIVER.
- THERE IS NO EXISTING STRUCTURE AT THE PROPOSED SITE. THE DATA PROVIDED REPRESENTS THE EXISTING (NATURAL) STREAM CONDITION AT THE LOCATION OF THE PROPOSED BRIDGE.

STATE OF VERMONT AGENCY OF TRANSPORTATION

Town Of BENNINGTON Bridge No. B15, B15N, B15S
 Highway No. VT RTE 279 Log Sta. _____
 Surv. Sta. _____
 VT ROUTE 279 & RAMPS OVER ROARING BRANCH OF WALLOOMSAC RIVER

PRELIMINARY INFORMATION SHEET

Designed By J.J. MANUSE Drawn By D.W. SHAFFER
 Checked By Date Bridge Design Supervisor
 B.J. CARLSON 04/08 K.M. WOJTKOWSKI Date 04/08

PROJECT BENNINGTON PROJECT NO. AC NH 019-(K5)
 TVGA CAD Drawing No. p1s.dgn Date 02/02/2009
 Bridge Sheet No. BR201 Sheet 188 of 367

